



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Michigan Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

COMMON WHEAT

'Frankenmuth'

In Testimony Whereof, I have hereunto set
*my hand and caused the seal of the Plant
 Variety Protection Office to be affixed
 at the City of Washington
 this 14th day of January in
 the year of our Lord one thousand nine
 hundred and eighty-two.*

Attest:

[Signature]
 Commissioner
 Plant Variety Protection Office
 Grain Division
 Agricultural Marketing Service

[Signature]
 Secretary of Agriculture



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

FORM APPROVED
OMB NO. 40-R3822

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY Frankenmuth		1b. VARIETY NAME Frankenmuth		FOR OFFICIAL USE ONLY PV NUMBER 8000165	
2. KIND NAME Wheat		3. GENUS AND SPECIES NAME Triticum aestivum		FILING DATE 9/30/80	TIME 3:00 A.M. P.M.
4. FAMILY NAME (BOTANICAL) Gramineae		5. DATE OF DETERMINATION December 1977 9/22/81 Feb. 15, 1979		FEE RECEIVED \$ 500.00 \$ 250.00	DATE 9/30/80 11/6/81
6. NAME OF APPLICANT(S) Michigan Agricultural Experiment Station		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Michigan State University E. Lansing, MI 48824		8. TELEPHONE AREA CODE AND NUMBER 517-353-9545	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) State-Federal Institution		10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION		11. DATE OF INCORPORATION	
12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: Dr. L.O. Copeland, Associate Professor, Dept. of Crop and Soil Sciences, Michigan State University, E. Lansing, Michigan 48824					
13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:					
<input checked="" type="checkbox"/> 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)					
<input checked="" type="checkbox"/> 13B. Exhibit B, Novelty Statement.					
<input checked="" type="checkbox"/> 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)					
<input checked="" type="checkbox"/> 13D. Exhibit D, Additional Description of the Variety.					
14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a). (If "Yes," answer 14B and 14C below.) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					
14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? TWO <input checked="" type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED			
15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If "Yes," give name of countries and dates.)					
15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If "Yes," give name of countries and dates.)					

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? ☒ YES ☐ NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

* July 21, 1980
(DATE)

* [Signature]
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

- 5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.
- 14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

EXHIBIT A - ORIGIN AND BREEDING HISTORY

8000165

Frankenmuth is an F₅ selection from a 1967 cross of Norin 10/Brevor14//Yorkwin/3/2*Genesee, A3141/4/Genesee*3/Redcoat, A5115. Selections were made for Hessian fly resistance, leaf rust resistance, and milling and baking quality. After each cross, selections with acceptable plant type and resistance were further tested for yield and quality performance at a number of locations. Only superior lines with high stable performance were used in subsequent crosses.

Concerning Exhibit A, the following information should clarify the selection procedures for all generations:

- F₁ - Bulk harvested from original crosses.
- F₂ - Planted in 12-18 ft. rows and 300 individual plants were selected on basis of plant type, mildew, and rust characteristics.
- F₃ - Established in four 18 ft. rows and 200 individual plants were selected on basis of plant # type, mildew and leaf rust characteristics.
- F₄ - Planted in four 18 ft. rows and 100 heads were selected on basis of mildew, leaf rust and Hessian fly resistance.
- F₅ - Three ft. headrows planted and 100 heads selected on basis of mildew, leaf rust and Hessian fly resistance.
- F₆ - Four 18 ft. preliminary yield plots established. No selection.
- F₇ - Advanced yield plots - no selection.
- F₈ - Advanced yield plots - no selection.
- F₉ - Advanced yield plots - no selection.
- F₁₀ - 500 headrows planted and 400 were selected and bulked for breeder seed on basis of plant type and mildew, Hessian fly, and leaf rust resistance.

Frankenmuth is uniform and stable for the characteristics described and within the limits of the acceptable variants as follows.

1. Bearded brown chaffed variant (102 cm high) - 0.03%
2. Apically awnleted white headed variant (102 cm high) - 0.25%
3. Taller apically awnleted white headed variant (108-112 cm high) - 0.25%

EXHIBIT B - NOVELTY STATEMENT

Frankenmuth is a beardless soft white winter wheat with a slight tendency to have awnlets on the apical spikelets. It has brown colored glumes at maturity, and a rather large head (13 x 90cm), tapering slightly toward the apex. The soft white variety closest in appearance is ~~probably~~ Yorkstar, however, Frankenmuth is about 1 in. taller in straw height and tends to be about 2 lb. higher in test weight. It is very similar to Augusta in plant and seed characteristics, but is about one inch taller and has brown colored chaff compared to white chaff for Augusta. It has resistance to races A and C of Hessian fly compared to none for Augusta and Yorkstar.

9/23/81

9/23/81

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Michigan Agricultural Experiment Station	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Michigan State University East Lansing, Michigan 48824	PVPO NUMBER 8000165
	VARIETY NAME OR TEMPORARY DESIGNATION Frankenmuth

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g., 0 8 9 or 0 9) when number is either 99 or less or 9 or less.

1. KIND:

1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

2 1 = SPRING 2 = WINTER 3 = OTHER (Specify) 1 1 = SOFT 2 = HARD 3 = OTHER (Specify) 5/6/81 Cylind B+D

1 1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

0 7 3 FIRST FLOWERING 0 7 8 LAST FLOWERING

4. MATURITY (50% Flowering):

--- NO. OF DAYS EARLIER THAN 1 1 = ARTHUR 2 = SCOUT 3 = CHRIS
0 8 NO. OF DAYS LATER THAN 1 4 = LEMHI 5 = NUGAINES 6 = LEEDS
9/22/81

5. PLANT HEIGHT (From soil level to top of head):

1 0 4 CM. HIGH
1 2 CM. TALLER THAN 1 1 = ARTHUR 2 = SCOUT 3 = CHRIS
CM. SHORTER THAN 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

2 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN 1 1 = YELLOW 2 = PURPLE

8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 1 Waxy bloom: 1 = ABSENT 2 = PRESENT
2 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT 1 Internodes: 1 = HOLLOW 2 = SOLID
0 3 NO. OF NODES (Originating from node above ground) 2 9 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

2 Anthocyanin: 1 = ABSENT 2 = PRESENT 2 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

2 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 1 Flag leaf: 1 = NOT TWISTED 2 = TWISTED
3 = OTHER (Specify)
1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT 1 Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
1 7 MM. LEAF WIDTH (First leaf below flag leaf) 2 4 CM. LEAF LENGTH (First leaf below flag leaf)
photocopy of 9/21/81

11. HEAD:

<input type="checkbox"/> 1 Density: 1 = LAX 2 = DENSE	<input type="checkbox"/> 1 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____
<input type="checkbox"/> 2 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED	
<input type="checkbox"/> 5 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify) _____	
<input type="checkbox"/> 9 <input type="checkbox"/> 0 CM. LENGTH	<input type="checkbox"/> 1 <input type="checkbox"/> 3 MM. WIDTH

12. GLUMES AT MATURITY:

<input type="checkbox"/> 2 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)	<input type="checkbox"/> 3 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)
<input type="checkbox"/> 3 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE	<input type="checkbox"/> 2 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

☐ 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

☐ 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

☐ 3 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

<input type="checkbox"/> 2 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL	<input type="checkbox"/> 1 Cheek: 1 = ROUNDED 2 = ANGULAR
<input type="checkbox"/> 1 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG	<input type="checkbox"/> 1 Brush: 1 = NOT COLLARED 2 = COLLARED
<input type="checkbox"/> 2 Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK	
<input type="checkbox"/> 1 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____	
<input type="checkbox"/> 0 <input type="checkbox"/> 6 MM. LENGTH	<input type="checkbox"/> 0 <input type="checkbox"/> 3 MM. WIDTH
	<input type="checkbox"/> 4 <input type="checkbox"/> 2 GM. PER 1000 SEEDS

17. SEED CREASE:

<input type="checkbox"/> 2 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'	<input type="checkbox"/> 2 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'
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18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> 1 STEM RUST (Races)	<input checked="" type="checkbox"/> 1 LEAF RUST (Races)	<input type="checkbox"/> 1 STRIPE RUST (Races)	<input type="checkbox"/> 1 LOOSE SMUT
<input type="checkbox"/> 1 POWDERY MILDEW	<input type="checkbox"/> 1 BUNT	<input type="checkbox"/> OTHER (Specify) _____	

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> 1 SAWFLY	<input type="checkbox"/> 1 APHID (Bydv.)	<input type="checkbox"/> 1 GREEN BUG	<input type="checkbox"/> 1 CEREAL LEAF BEETLE
<input type="checkbox"/> OTHER (Specify) _____	HESSIAN FLY RACES: <input type="checkbox"/> 1	<input type="checkbox"/> 1 GP <input type="checkbox"/> 2 A <input type="checkbox"/> 1 B <input type="checkbox"/> 2 C	<input type="checkbox"/> 1 D <input type="checkbox"/> 1 E <input type="checkbox"/> 1 F <input type="checkbox"/> 1 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Augusta	Seed size	Augusta
Leaf size	Augusta	Seed shape	Augusta
Leaf color	Augusta	Coleoptile elongation	Augusta
Leaf carriage	Augusta	Seedling pigmentation	Augusta

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggles and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

SEP 30 1980

Table 1. Wheat variety comparisons. (Exhibit D)

Variety	Origin	Chaff Color	Straw Height (in)	Test Weight (lbs)	Hessian Fly Resistance	Winter Hardiness	Lodging Resistance	Leaf Rust Resistance	Powdery Mildew Resistance
Arrow	New York	bronze	36	59.0	none	good	very good	susceptible	susceptible
Augusta	Michigan	white	39	57.7	none	good	very good	resistant	susceptible
Frankenmuth	Michigan	brown	40	59.4	Races A & C	good	very good	resistant	resistant
Fredrick	Canada	white	39	59.5	Races A & C	good	good	resistant	susceptible
Genesee	New York	bronze	45	59.5	none	good	good	susceptible	susceptible
Houser	New York	white	34	57.7	none	good	very good	resistant	resistant
Ionia	Michigan	brown	42	59.7	Race A	good	good	resistant	susceptible
Tecumseh	Michigan	white	37	61.1	Races A & C	very good	very good	resistant	resistant
Yorkstar	New York	bronze	39	57.5	none	good	very good	susceptible	susceptible
Abe	Indiana	white	34	60.4	all known races	very good	very good	resistant	resistant
Argee	Wisconsin	white	35	58.5	reaction unknown	very good	very good	resistant	resistant
Arthur	Indiana	white	36	60.5	all known races	very good	very good	resistant	resistant
Arthur 71	Indiana	white	36	60.5	all known races	very good	very good	resistant	resistant
Beau	Indiana	white	35	60.4	all known races	very good	very good	susceptible	resistant
Downey	Indiana	white	32	59.0	all known races	good	good	susceptible	resistant
Oasis	Indiana	white	36	60.5	all known races	very good	very good	resistant	susceptible
Pioneer S-76	Pioneer	white	33	58.8	none	good	very good	susceptible	susceptible
Pioneer S-78	Pioneer	white	31	58.6	none	good	very good	susceptible	susceptible
Roland	Illinois	white	34	58.2	reaction unknown	very good	very good	resistant	resistant
Ruler	Ohio	white	36	60.5	Races A, C & F	very good	very good	susceptible	susceptible
Sullivan	Indiana	white	40	58.5	all known races	good	good	resistant	resistant
Titan	Ohio	white	39	59.0	Race A	very good	very good	resistant	resistant

Soft White Wheat Varieties

Soft Red Wheat Varieties

Table 6. Wheat, milling, and flour analytical and baking data, and quality scores, Michigan Drill Plot entries, 1979 crop.

LDB NO.	ENTRY	MILLING		BAKING		COMBINED		MOIS. PCT.	TEST		PROT. PCT.	ASH PCT.	WHEAT		SIZING		RED. PASS	BREAK		MILLAB. SCORE
		QUALITY SCORE	QUALITY SCORE	QUALITY SCORE	QUALITY SCORE	WT. KG/HL	MT		PART. SIZE INDEX PCT.	FLOUR CONT. PCT.			FLOUR YIELD PCT.	FLOUR YIELD PCT.						
MICHIGAN DRILL PLOT SERIES																				
101 SERIES																				
STANDARD=79163 (AUGUSTA)																				
79150	STANDARD	100.0 A	100.0 A	100.0 A	11.0	77.8	10.6	1.63	34.7	9.6	10	29.0	76.1	103.7						
79151	101 M0001 GENESSEE	98.2 B	88.6 D	88.6 D	11.1	79.1	11.9*	1.60	32.6*	10.2*	11	24.10	76.5	108.9						
79152	101 M0201 ARTHUR	96.2 B	85.6 D	85.6 D	10.7	79.8	12.90	1.67	32.3*	11.10	11	24.10	76.4	107.0						
79153	101 M0202 YORKSTON	102.2 A	103.1 A	102.2 A	11.1	77.8	11.0	1.55	34.9	9.7	11	28.6	76.7	112.7						
79154	101 M0260 IONIA	92.1 C	88.7 D	88.7 D	10.7	79.6	11.9*	1.62	31.30	10.90	12	26.90	76.0	100.3						
79155	101 M0263 ARE	85.5 D	80.3 E	80.3 E	11.2	79.8	13.10	1.69	35.0	12.50	12	24.30	75.5*	90.6						
79156	101 M0266 FREDRIC	96.4 B	100.9 A	96.4 B	11.5	79.8	11.9*	1.63	36.6	11.00	12	26.7	75.6*	103.9						
79157	101 M0276 KILMER	95.0 B	80.6 E	80.6 E	11.2	81.6	11.7*	1.57	36.5	13.00	12	28.7	75.6*	103.9						
79158	101 M0280 TEFUMSE	105.5 A	88.0 D	88.0 D	11.3	80.6	13.30	1.72	35.1	9.2	10	25.60	77.9	101.6						
79159	101 M0282 BENI	83.5 E	82.1 E	82.1 E	10.7	80.7	13.80	1.76	35.3	13.50	12	25.70	75.00	83.3						
79160	101 M0284 HOUSER	104.2 A	102.0 A	102.0 A	10.9	76.7	10.9	1.72	36.6	9.5	10	31.8	76.7	115.2						
79161	101 M0285 SULLIVA	90.5 C	87.3 D	87.3 D	10.6	80.6	13.10	1.72	34.7	12.80	12	24.20	75.20	97.9						
79162	101 M0286 TITON	90.7 C	92.8 C	90.7 C	11.0	78.3	11.2	1.58	34.5	13.30	12	27.8	74.30	95.6						
79163	101 M0290 FRANKEN	105.0 A	94.2 C	94.2 C	11.0	80.1	11.30	1.63	33.5	9.3	11	28.0*	76.7	116.7						
79164	101 M0300 AUGUSTA	100.0 A	100.0 A	100.0 A	11.0	77.8	10.6	1.63	34.7	9.6	10	29.0	76.1	108.7						
79165	101 B2090	105.2 A	99.6 B	99.6 B	11.0	78.8	10.7	1.63	32.9*	9.2	10	28.5	76.5	116.7						
79166	101 B2202	97.6 B	103.5 A	97.6 B	11.2	77.9	10.5	1.59	33.3*	10.60	12	28.3*	75.5*	105.5						
79167	101 B2212	103.0 A	100.2 A	100.2 A	11.1	78.8	10.4	1.52	34.5	9.3	10	28.5	76.7	119.2						
79168	101 B2344	102.1 A	90.8 C	90.8 C	11.2	80.1	11.4	1.59	33.7	10.0	11	27.60	75.9	112.5						
79169	101 B3013	97.0 B	79.1 F	79.1 F	11.3	79.1	11.2	1.53	31.10	11.00	11	27.00	75.7	104.5						
79170	101 B3121	101.8 A	103.3 A	101.8 A	11.2	77.5	10.9	1.62	33.2*	9.5	11	26.0*	76.9	112.9						
79171	101 B3024	103.2 A	92.1 C	92.1 C	11.3	78.3	10.5	1.61	33.4	9.6	11	26.80	76.6	112.6						
79172	101 B3144	94.7 C	91.8 C	91.8 C	10.2	77.3	10.9	1.61	33.4	10.60	10	27.9*	76.1	102.6						
79173	101 B4014	107.8 A	97.8 B	97.8 B	11.2	78.2	10.7	1.55	33.7	8.8	10	29.1	76.8	120.4						
79174	101 B4021	103.3 A	95.2 B	95.2 B	11.2	78.3	10.5	1.63	33.9	9.3	11	29.1	76.8	113.3						
79175	101 B4128	105.7 A	90.5 C	90.5 C	11.0	78.0	10.4	1.63	33.3*	9.2	11	28.2*	76.4	116.9						
79176	101 B5008	104.2 A	92.8 B	92.8 B	11.5	80.0	11.0	1.59	35.9	9.2	11	28.9	77.1	113.8						

Table 6 (contd.). Wheat, milling, and flour analytical and baking data, and quality scores, Michigan Drill Plot entries, 1979 crop.

LAB NO.	STRAIGHT-GRADE FLOUR										CAKE PATENT FLOUR					INTER-MNL SCORE
	MOIS. PCT.	ASH PCT.	PROT. PCT.	VISC. MACH.	VISC. MACH.	MICRO PCT.	COOKIE DIAM. CM.	TOP GRAIN	ASH PCT.	PROT. PCT.	INIT. PH	FINAL PH	CHLORINE RESPONSE PH/ML/O	GPT. LIQUID LEVEL ML.	CAKE VOLUME ML.	
79150	13.6	.41	9.0	56.	75.	47.5	17.9	6.	.31	8.2	5.96	4.84	2.66	140.	1048.	89.
79151	13.4	.41	10.3*	53.	48.	49.3*	17.9	6.	.29	9.3*	5.62	4.91	2.39	130.	1061.	83.
79152	13.8	.41	11.6*	91.	57.	48.8*	17.8	6.	.30	10.5*	5.79	4.85	2.23	130.	1067.	87.
79153	13.7	.40	9.3	44.	51.	47.7	18.3	5.	.31	8.5*	5.82	4.87	2.42	130.	1049.	88.
79154	13.6	.43	10.3*	66.	58.	49.0*	17.8	5.	.30	9.5*	5.89	4.82	2.48	130.	1050.	89.
79155	14.0	.44*	11.7*	113.	72.	49.1*	17.7	5.	.32	10.6*	5.78	4.84	2.18	125.	1100.	84.
79156	13.5	.40	10.2*	64.	59.	47.8	18.1	6.	.31	9.1*	5.80	4.81	2.47	130.	1078.	89.
79157	13.6	.39	10.4*	77.	66.	50.3*	17.8	6.	.27	9.1*	5.89	4.83	2.71	120.	1064.	82.
79158	13.7	.41	11.9*	127.	75.	49.0*	17.9	6.	.30	10.6*	5.67	4.82	2.23	130.	1060.	88.
79159	13.7	.42	12.4*	133.	79.	48.7*	17.7	4.	.29	11.1*	5.74	4.75	2.30	130.	1095.	85.
79160	13.9	.40	12.2*	56.	69.	48.0	18.2	6.	.29	8.2	5.83	4.75	2.63	130.	1081.	82.
79161	13.7	.38	10.1*	125.	67.	48.6*	17.8	5.	.28	11.0*	5.73	4.75	2.27	130.	1084.	83.
79162	13.4	.39	9.8	74.	68.	48.1*	17.9	5.	.30	9.0	5.80	4.80	2.70	130.	1080.	82.
79163	13.6	.41	9.0	56.	75.	47.5	17.9	6.	.31	8.2	5.83	4.81	2.60	130.	1065.	89.
79164	13.2	.39	9.3	43.	49.	48.5	18.3	7.	.29	8.4	5.86	4.80	2.65	130.	1048.	89.
79165	13.6	.40	9.0	41.	53.	48.4	18.1	7.	.29	8.1	5.80	4.81	2.79	130.	1069.	88.
79166	13.6	.38	9.2	38.	44.	48.3	18.1	6.	.29	8.3	5.82	4.85	2.69	130.	1066.	91.
79167	12.9	.41	10.0*	64.	62.	48.3	17.8	5.	.30	8.9	5.82	4.78	2.44	130.	1052.	89.
79168	13.1	.39	9.7	63.	67.	51.2*	17.4*	5.	.29	8.7	5.80	4.79	2.65	130.	1057.	88.
79169	13.6	.41	9.3	41.	49.	48.3	18.1	7.	.31	8.4	5.88	4.73	2.60	130.	1065.	91.
79170	13.6	.40	8.9	42.	57.	48.7*	17.9	6.	.31	8.1	5.86	4.70	2.76	130.	1062.	86.
79171	13.5	.42	9.5	51.	60.	49.1*	18.0	6.	.32	8.6	5.85	4.70	2.55	130.	1062.	87.
79172	13.5	.38	9.3	39.	44.	48.4	18.1	6.	.31	8.4	5.85	4.75	2.82	130.	1081.	87.
79173	13.5	.41	9.2	37.	50.	48.2	18.0	6.	.31	8.4	5.91	4.79	2.80	130.	1103.	85.
79174	13.9	.38	8.9	47.	47.	49.1*	17.9	5.	.29	8.1	5.92	4.76	2.90	130.	1083.	85.
79175	13.7	.39	9.0	45.	58.	48.7*	18.1	6.	.31	8.2	5.90	4.78	2.80	130.	1120.	82.
79176	13.5	.41	9.5	47.	54.	48.2	18.0	5.	.31	8.6	5.85	4.77	2.70	130.	1098.	90.



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
NATIONAL AGRICULTURAL LIBRARY BUILDING
BELTSVILLE, MARYLAND 20705

FEB 26 1982

Subject: Seed Sample of Protected Variety
Certificate No. 8000165
Kind and Variety - Wheat 'Frankenmuth'
Breeder - Michigan Agricultural Expt. Sta.

To: National Seed Storage Laboratory
Fort Collins, CO 80521

Attached is the above-identified sample and an Objective Description of Variety form in accordance with our Memorandum of Understanding and as agreed upon during my visit with Dr. Louis Bass on June 12, 1972.

One copy of this duplicate form showing the result of your germination test on 100 seeds of pure seed of this sample should be returned to this Office. Return of the duplicate form will serve as acknowledgement of receipt of the sample.

Germination:

99 %

Date: 4/82

Sincerely,

Bernard M. Leese
Commissioner
Plant Variety Protection Office

Attachment

In duplicate

John Doe
6/22/72

163540